Southward range expansion of the Mourning Gecko *Lepidodactylus lugubris* on mainland Australia and nearshore islands

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Introduction

The Mourning Gecko *Lepidodactylus lugubris* is a species that colonises areas of human habitation and its spread is assisted by humans (Lever 2003). The species continues to colonise many tropical and subtropical parts of the world (e.g. Yamashiro *et al.* 2000; Bauer *et al.* 2007; Kraus 2009).

In Australia, the mainland range for *L. lugubris* is described variously as 'coastal areas in eastern Queensland, from islands of Torres Strait to Townsville area' (Wilson and Swan 2008), 'several coastal localities between Innisfail and Port Douglas and from many islands in the Torres Strait' (Cogger 2000), 'Mossman to Innisfail' (Lever 2003) and 'Torres Strait to Bowen' (Couper *et al.* 2000). The species has more recently colonised Heron Island, near Gladstone (Limpus *et al.* 1999; Messenger 2005) and Darwin in the Northern Territory (Scrymgour 2006; McKay and Horner 2007; Wilson and Swan 2008) (Figure 1). It is thought the populations in the Torres Strait are indigenous while those on mainland Australia are introduced (H. Cogger pers. comm. 1996, in Lever 2003). Bomford (2008) considered the establishment risk rank of this species to be 'serious' in Australia.

Observations and Discussion

A young *L. lugubris* was observed and photographed at the resort at South Molle Island (20°15'46"S, 148°50'14"E), off Airlie Beach at 0750 h on 17 August 2008. It was inactive and resting in the open on paving. No other geckos were observed, nor searched for on South Molle Island at the time. The identity of the species was verified by Patrick Couper, Queensland Museum at Brisbane, Australia.

Searches of the Queensland Parks and Wildlife Service's (QPWS) Wildlife Online database in September 2008 revealed no records for this species on Molle Islands National Park (of which South Molle Island is a part) or adjacent island and coastal range national parks and state forests. The most southerly mainland record in both QPWS and Queensland Museum databases (as at September 2008) were from Bowen (20° 01' S, 148° 14' E), some 68 km to the northwest of South Molle Island (Figure 1). The Bowen population was recorded only recently (collections made in 1998 by Queensland Museum), as were records in two distinct localities around Townsville (in 1998 and 1999), some 240 km to the northwest of South Molle Island.

Interestingly, Limpus *et al.* (1999) noted that despite extensive searches for *L. lugubris* in coastal areas and islands between Mission Beach and Townsville in the mid-late 1970's, no geckos were located. This, and the more northerly and restricted mainland ranges previously published for *L. lugubris* in field guides, monographs and journal articles, suggests a recent progressive southerly range expansion on the mainland and nearshore islands. In 1991, the Queensland Museum indicated only one locality for this species on the Queensland coast (near Port Douglas) besides those in the Torres Strait (Covacevich and Couper 1991).

Limpus *et al.* (1999) considered the colonisation of Heron Island by *L. lugubris* to have been more likely by geckos from nearby Pacific Islands to the east rather than from mainland Australia, as it was some ~850 km south of the nearest known mainland record at the time (i.e. Mission Beach). In the case of South Molle Island, the gecko(s) are more likely to have originated from the coastal mainland to the north, as South Molle is less than 3 km from the coast with regular tourist interchange. Although it was not ascertained that the species was established on South Molle Island, its parthenogenetic nature (e.g. Harfmann Short and Petren 2008) suggests its presence is likely to lead to colonisation. The record on South Molle Island suggests the Mourning Gecko is likely to colonise other Whitsunday Islands and adjoining coastal settlements (e.g. Airlie Beach, Shute Harbour), if it has not already done so. Further surveys and research into the occurrence of this species on mainland Australia and nearshore islands (particularly those with tourist resorts) would assist in documenting the rate and likely extent of colonisation in Australia. This may be important for conservation, as the Mourning Gecko has the potential to compete with native Australian geckos (e.g. Cogger 2006).

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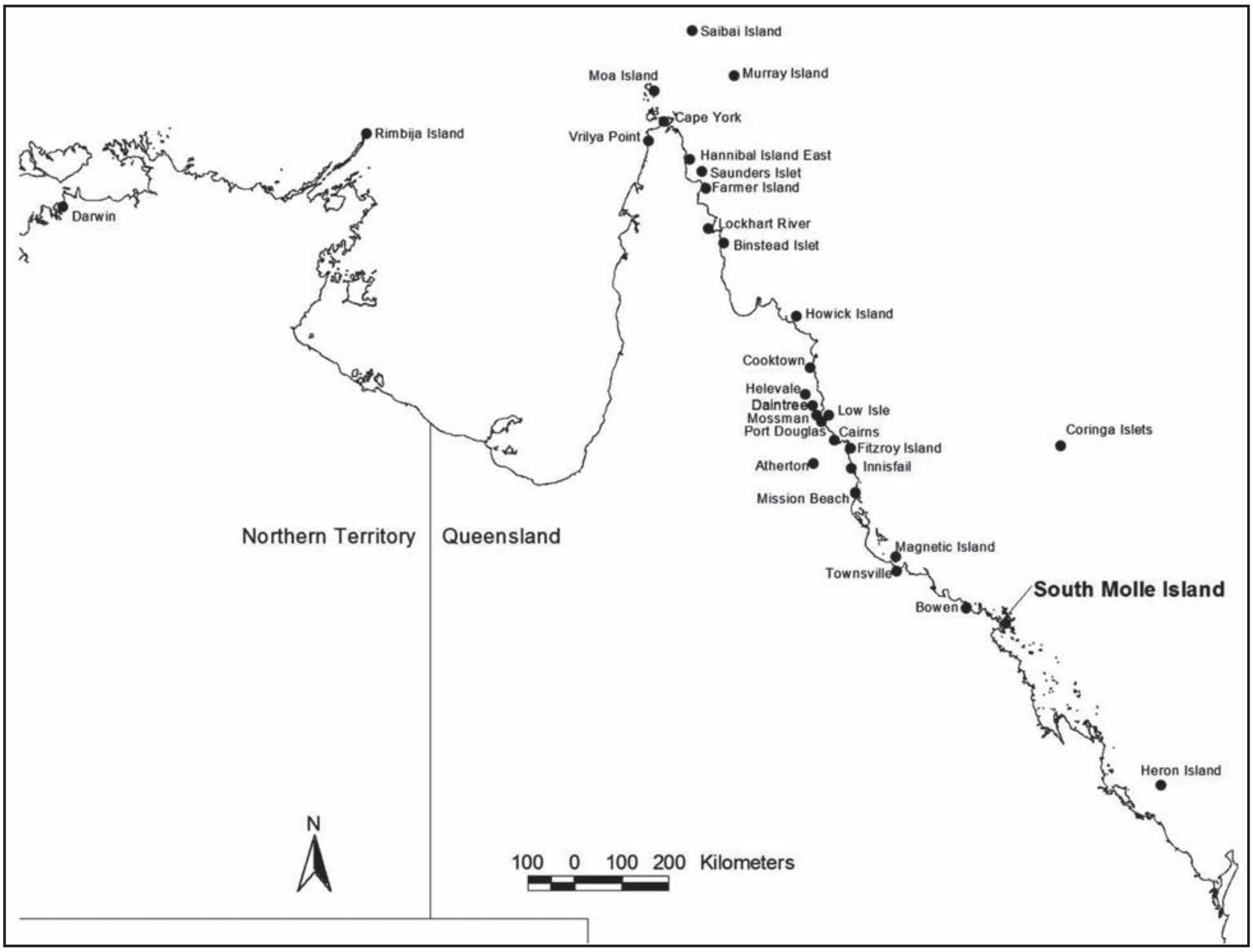
Patrick Couper identified the species and provided information, Mark Antos, Janelle Thomas and an anonymous referee commented on a draft, while Andrew Amey and Andy Baker provided distribution records of the species from the Queensland Museum and Queensland Parks and Wildlife Service databases, respectively. The South Molle Island record has been added to WildNet, the wildlife database of the now Queensland Department of Environment and Resource Management.


Saibai Island
Moa Island
Murray Island
Cape York
Rimbija Island
Vrilya Point
Hannibal Island East
Saunders Islet
Farmer Island
Darwin
Lockhart River
Binstead Islet
Howick Island
Cooktown
Helevale
Daintree
Low Isle
Mossman
Port Douglas
Cairns
Coringa Islets
Fitzroy Island
Atherton
Innisfail
Mission Beach
Northern Territory
Queensland
Magnetic Island
Townsville
South Molle Island
Bowen
Heron Island
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100 0 100 200 Kilometers

Figure 1. Locations of Mourning Gecko records from Queensland Museum and Queensland Parks and Wildlife Service databases, for range extremes and locations mentioned in published literature (see text plus Kluge 1963; Cameron and Cogger 1992; Turner and Green 1996; Woinarski *et al.* 1999; Sprackland *et al.* 2004), and the location of the South Molle Island record as described in this paper. The Cocos (Keeling) Islands, where a population also occurs (Cogger *et al.* 1983), is not shown.

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